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ABSTRACT

Four models are discussed with which to view students, educational goals, and learning environments. Each of the four theories emphasizes a unique aspect of the total development process. Piaget's model describes the development of structures and processes which characterize mature logical thinking. Perry provides a closer look at students' beliefs, about the nature of knowledge and authority, identifying and chronicling epistemological assumptions that profoundly affect students' reactions to and ability to learn from various instructional strategies. Relationships between Perry's "positions" and Erikson's model of identity development are described, and their implications for curriculum design explored. Finally, Kohlberg's stage theory and Gilligan's critique of that theory provide two perspectives on the development of systems for analyzing moral and value issues, and suggest instructional processes most likely to enhance this development. Each of these four theories is briefly summarized and a critique provided, followed by an analysis of the specific implications of the theory for teaching and learning in the colleges in Project Quality Undergraduate Education. Fifty-eight references are listed. (KM)

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INTELLECTUAL, PSYCHOSOCIAL, AND MORAL DEVELOPMENT IN COLLEGE: FOUR MAJOR THEORIES*

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INTRODUCTION

Most faculty in liberal educational environments would like to believe that they are successfully achieving the lofty goals carried in their institutional catalogs. Yet lacking a common language for discussing such goals, lacking clarity as to the nature of the goals, lacking a sense of what the ideal student is really like, and lacking in empirical means of determining how successful they are in achieving any kind of positive outcome, faculty are susceptible to challenges of all kinds, not the least of which is that they should be "training" students for "useful" careers and vocations in a very direct and pragmatic (and measurable) way.

How can these challenges be addressed without injustice to the values and goals which independent colleges represent? In this paper, we present four models, four "languages," if you will, four "lenses" for viewing students, educational goals, and learning environments. Each offers a different perspective; taken together they provide a beginning for our continuing efforts to improve the educational experience. They are neither exclusive nor exhaustive; numerous other models exist. Our hope is that the reader will be enticed to learn more about these models, and to share the new perspectives gained with colleagues, encouraging them to join together in an ongoing enterprise which can mean the difference between business as usual and a new and engaging interaction with students, parents, alumni, and the social context in which we teach.

In general, theories of cognitive and psychological development trace paths from simplicity and absolutism to complexity and relativism, from concreteness to abstractness, and from external to internal regulation of behavior. This is not surprising in view of our culture's idealization of such values as individual responsibility (internal or self-regulation), critical analysis (abstractness and complexity; differentiation of ideas), and tolerance (relativity of values). What may be surprising to some is the diversity of current theories of development which specify intervening steps or stages and suggest conditions and processes that encourage movement through those stages. These theories have powerful implications for educators who desire to engage students fully in the learning process while encouraging their evolution as thinking and caring human beings.

Each of the four theories presented in this paper emphasizes a unique aspect of the total developmental process. Piaget's model describes the

development of structures and processes which characterize mature logical thinking. Perry provides a closer look at students' beliefs about the nature of knowledge and authority, identifying and chronicling epistemological assumptions that profoundly affect students' reactions to and ability to learn from various instructional strategies. Relationships between Perry's "positions" and Erikson's model of identity development are described, and their implications for curriculum design explored. Finally, Kohlberg's stage theory and Gilligan's critique provide two important perspectives on the development of systems for analyzing moral and value issues, and suggest instructional processes most likely to enhance this development. By keeping in mind the major dimensions noted above, the reader will be able to discern the commonalities which unite these theories and make them so relevant to teaching and learning in today's liberal arts college.

All the models presented share a basic methodological foundation. They were developed on the basis of extensive listening to and observation of individuals at various points in their growth. Piaget's "clinical method" involved observing and interacting with children as they attempted to solve specific concrete or formal operational tasks. Perry and his associates interviewed dozens of students at Harvard, meeting their study participants once a year for lengthy, open-ended conversations about "What stood out" about the past year. Kohlberg used moral dilemmas, and Erikson drew from clinical experiences and biographies. Each listened with the "third ear", attempting to discern patterns, to hear a world-view, and to give credence and respect to the intellectual work that created whatever world-view emerged.

Thus a major contribution of these theorists is the example of empathic listening each provides. A primary purpose in reviewing these theories is to provide a framework for more sensitive listening--not to categorize or label students, but to establish a series of potential contexts for understanding each learner's present way of construing the world, for appreciating the progress it represents over past constructions, and for respecting the learner's need to proceed to the next most likely construction at his or her own pace.

For each of these theorists we will briefly summarize and critique their major ideas. Each section will conclude with an analysis of the specific implications of the theory for teaching and learning in Project QUE colleges. These stage theories are not without their limitations, so we preface our remarks with some qualifying observations.

First, to some degree all four theories describe linear, progressive movement through age-related stages. Regression, defined as use of an earlier stage, seems contradictory to the notion of orderly forward progress. Yet when approaching a new task, searching for a creative solution to some problem, producing a work of art, or coping with occasional levels of high stress many learners behave in ways characteristics of earlier stages of development (Kris, 1952). The challenges of college, which include entering new environments, assuming new roles and responsibilities, or encountering increased or differing challenges to their self-image or sense of self-esteem, may inhibit use of skills and structures evident in other situations (Barber, 1981; Knefelkamp, 1982). For example, adults returning to school after a long absence may fail to use problem-solving strategies or social skills they use at home or at work on a daily basis. Such regression may be adaptive and is most often temporary and limited to the situation presenting the challenge; hence, Kohlberg's term "functional regression."

Three of the four theories are based on research with adolescents and/or young adults. Only Erikson attempts to describe experiences and issues common to adults. Furthermore, most of the observations about developmental stages have been made about males, and all have been made about people living in European-American cultures. Recent research on women's development challenges basic assumptions of Kholberg's model, and research on Erikson's identity periods reveals a variety of sex differences, as we shall see. Sex differences are also emerging in research on Perry's stages as well. Although Piaget's work has held up fairly well in cross-cultural research, and Kohlberg's stages are based on cross-cultural data, critics have attacked all of these models for one form or another of ethnocentrism or methodological flaws.

Thus we make no claim for the universality or total generalizability of these theories; we offer them as entry points for common thinking about students, learning, and academic environments. They provide perspectives on the teaching/learning process that are invaluable for those who choose to approach the educational process reflectively. They can help us ask better questions about what we are doing, why we are doing it, and how we can do it more effectively. At the same time, their inadequacies have already stimulated new questions and can be expected to generate increased understanding of learning in all its many forms.

PIAGET: COGNITIVE DEVELOPMENT

The Theory

Piaget's ideas provide a foundation for understanding cognition, which is central to the tasks of educators. Once Piaget's ideas are understood, subsequent ideas should be relatively easy to grasp.

Three essential axioms of Piaget's theory are that:

1. Knowing is ultimately based on activity, both physical and mental, an interaction between self and environment.

2. Development is a gradual and progressive reorganization of mental structures used to "make sense" of the world.

3. Learning (other than rote learning) occurs when the learner acts to resolve discrepancies between beliefs and new information which does not fit those beliefs.

Piaget's theory is founded on a "constructionist" or "interactionist" epistemology. That is, he emphasizes the active participation of the knower in the process of understanding the world. "The world" as we know it is the product of inherent properties of mind interacting with inherent properties of the environment. We do not arrive with a "blank slate"--either at birth or at college. We do not learn solely because we are rewarded for learning, but because our primary mission, cognitively at least, is to make sense of the world. Even as infants we are like little scientists, testing hypotheses, using our theories to understand our experiences, trying to fit new experiences into old theories, and modifying our theories only when the evidence of their inadequacy overwhelms us.

Piaget documented this view by studying closely the behavior of his infant children (Piaget, 1954), as well as numerous children and adolescents in his native Switzerland. Observing infants, he noted their continual use of bodily action as a means of understanding their world. For instance, as soon as the infant is capable of doing so, it applies its habit of sucking things to a new problem: learning about nonnutritive objects (the familiar "everything into the mouth" period). Later, the infant studies the paths of moving objects by dropping them repeatedly from the crib. Piaget labeled the first two years the "sensori-motor" period because of the infant's use of its senses combined with bodily or "motor" activity to make sense of the world.

In Piaget's view, the child's interactions stimulate progressive reorganization of mental structures (the child's equivalent to models, theories, and paradigms about what to expect from the environment). A primary characteristic of reorganized stages is that they become more general and abstract. We come to rely less and less on direct experience and physical activity, simplifying by integrating common experiences and using increasingly sophisticated representational systems (including but not limited to language) to store what we know. Thus the infant "knows" that when she drops her toy it will fall because she has observed a simple cause-effect relation between her action and the behavior of the object. As a formal operational thinker, she will be able to use an algebraic formula or write a paragraph to describe symbolically what was known through action in her infancy.

Cognitive abilities in childhood are, of course, intermediate between those of toddlers and adolescents. Simple relationships between events and objects come to be understood and taken for granted. The child understands that she and her brother can have the same amount of milk shake even if the glasses are different sizes. But the child's emerging logic is only effective in dealing with tangible objects and observable events (even if not directly observed). Problems requiring proportional relations, reasoning about improbable situations, or isolation of factors which combine to determine the outcomes of events are not yet solvable by the child in this "concrete operational" period. The mental structures necessary to solve such problems, termed "formal operations," generally appear during adolescence, under favorable conditions. Most traditional college-level instruction is conducted under the assumption that students reason formally. This assumption has recently been challenged, as we shall see.

TABLE 1 summarizes various mental processes which Piaget has identified as "formal" in nature (Inhelder and Piaget, 1958), and indicates responses to such tasks expected of a student who is still a concrete learner. As an example, a formal thinker will devise a series of tests to determine the factors influencing flexibility of rods (FIGURE 1): when testing each hypothesized factor, this person will hold all other factors constant and vary only the factor being checked, but a concrete learner will confound the factors (question 4, FIGURE 1) without realizing the implications for his conclusions.

TABLE 1

Formal Task/Concrete Learner*

Formal Operation Required	Concrete Operational Response
Hypothetical Reasoning (reasoning about possible outcomes; e.g., projections, forecasting, speculating)	Rejection of hypothetical premises that contradict "reality;" stopping when an "actual" solution is found; inability to consider further alternatives.
Deductive Reasoning (reasoning from a general rule or principle to a specific instance; "If . . . then" reasoning)	Drawing of invalid conclusions; failure to consider logical relationships inherent in the problem; failure to recognize relevance of a previously "learned" principle to a specific situation.
Proportional Reasoning (reasoning about relationships that can be expressed in the form $\frac{x}{y} = \frac{a}{b}$)	Attempts to use algorithms or rote formulas--not necessarily correctly. Use of additive relationships where ratios should be constructed.
Systematic Combination of Elements (generating a list of all possible combinations of three or more variables)	Failure to use an orderly, organized, planned approach. Failure to identify all combinations and/or duplications of responses. May require reminders to use a previously learned system.
Holding Variables Constant (establishing a trial procedure to isolate the effects of a single factor, exclude irrelevant factors, or separate out the combined effects of related variables)	Failure to separate effects of individual variables; failure to establish critical diagnostic tests of a hypothesis; ignoring of disconfirming or contradictory evidence; inability to relate multiple variables; reasoning limited to one or two variables at a time.
Correlational Analysis (determining whether two events co-vary or act independently)	Focus on positive associations without recognition of possible disconfirming cases.
Probabilistic Reasoning (estimating or calculating the change that a given event will occur; includes proportional reasoning)	Failure to grasp sampling concepts; insistence on actual "counts" as only way to determine outcomes; use of addition and subtraction to calculate relationships.
Propositional, Verbal, or Symbolic Reasoning (reasoning about relationship between statements, observations, or symbols)	Efforts to "capture" all information for later rote memorization; literal interpretation of symbols; poor comprehension of relationships expressed; failure to detect inconsistencies in own or others' logic.
Complex Problem Solving (requires transformation of familiar procedures or generalization to a new context)	Tendency to treat each problem as if it were a new one; difficulty establishing a context of related problems; "forgetting" of previously learned procedures or failure to recognize their relevance for present problem (lack of transfer of knowledge); preference for step-by-step, "cookbook" instruction in how to solve each new type of problem that arises.

*Based on Inhelder & Piaget (1958)

FIGURE 1

Flexible Rods Problem*

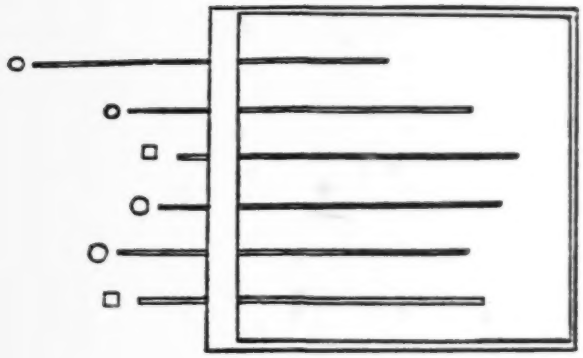

Diagram 1

Diagram 2

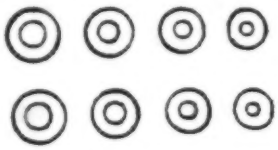

Diagram 3

Diagram 1 illustrates a top view of an apparatus which can be used to test the flexibility of rods which vary in cross-sectional shape (square or round), thickness (10 mm^2 or 16 mm^2), and material (brass, steel, or wood). The user can adjust the lengths of the rods as shown in Diagram 2. The apparatus includes a set of weights (Diagram 3) which can be placed on the ends of the rods. Flexibility can be judged by the closeness of the weighted rod tip to the water in the apparatus (Diagram 2).

1. Using this apparatus, how would you determine which variable(s) affect the flexibility of the rods? Describe your suggested procedure in detail below.

2. What would you do to find out if square rods bend more than round rods?

3. What would you do to find out if brass rods bend more than wooden ones?

4. If you had a 40 cm, square, steel rod with 10 mm^2 cross-section and a 50 cm square, steel rod with 16 mm^2 cross-section, could you compare them to determine whether thickness affects flexibility? Why or why not?

*Tomlinson-Keasey, and Campbell, n.d.; based on Inhelder and Piaget (1958).

As another example, a concrete learner can observe and make simple generalizations about which of a group of objects will float, but will be at a loss to explain unexpected events such as a large object floating (a block of wood) or a small object sinking (a needle once it breaks the surface tension of the water). Only a formal learner can provide a logical explanation when a prediction is disconfirmed, and go on to make a general statement about the behavior of floating objects. This is formal operations; thought is general, abstract, and complex. It is also internally regulated, since it is independent of the concrete reality of rods (they could be variables in a psychological experiment) or the particular floating objects used.

As a corollary, we note that a major cognitive achievement of the formal period is the ability to reason about possibilities or hypothetical situations. Thus, given a new object such as a golf practice ball or jar top, the formal thinker can study it and make a reasonable prediction as to whether it will float, drawing on the general rule he or she has "constructed" about flotation.

What are the conditions for development of this type of reasoning? Throughout the early years, the child is acquiring a backlog of concrete, action-based experiences in the world. Without these experiences, the mind has nothing to act upon, and would have difficulty developing. But experience alone is not sufficient. Some experiences are clearly more likely than others to stimulate the mind to act. What characterizes those more "stimulating" experiences? This question is addressed by Piaget's third "axiom":

> Learning (other than rote learning) occurs when the learner acts to resolve discrepancies between beliefs and new information which does not fit those beliefs.

Piaget terms the reaction to discrepancies "disequilibration." With this language, he suggests a process whereby the cybernetic system of the mind seeks to rectify an imbalance between two normal, everyday processes: assimilation (the incorporation of information into a pre-existing understanding of "the way the world is") and accommodation (adjusting one's understanding to encompass variations in the external world).

As adults, our understanding is normally sufficient to avoid the need for making major accommodations; we assimilate most events or information and make minor, unnoticed adjustments as necessary. In fact, we <u>prefer</u> to

assimilate; accommodation requires effort. Only when we experience major discrepancies are we aware of accommodation (and perhaps our resistance to it!), often expressed in the emotional reaction of surprise. We accommodate our thinking in order to assimilate as much available, relevant information as possible.

But the cognitions of the growing young person are only partially developed, so that they are more often susceptible to surprises. In education, a once-popular term for such times of surprise was "teachable moments." When the learner responds to unexpected information by adjusting a particular structure of understanding, we say that "equilibration" has taken place. The "light bulb" comes on. As teacher and learners, all of us have experienced such reorganizations of understanding--and wished we knew how to make them happen.

Piagetians would say that we can't "make" them happen; we can only enhance their probability of occurrence. We do this by designing learning experiences that highlight discrepancies, and then letting the learner plan and execute a course of action (alone or with peers) to resolve the discrepancy. The teacher can establish the conditions for discovery of the discrepancy, and provide support for the learner's efforts to resolve it, but cannot, in fact, make the student learn, if by learning we mean something other than rote memorization of a rule. Thus in the "floating objects" problem, students who have not grasped the general rule can be placed together in a group to discuss, experiment, and arrive at a deeper understanding of the task, perhaps evidenced by their ability to accurately predict the behavior of five or six new objects, and to write out a rule which predicts floating behavior in general. In the process, they work out "secrets" of organizing and recording observations, planning experiments eliminating irrelevant information--many of which, with encouragement, they will apply to new problems and eventually use spontaneously. Contrast this with the usual didactic methods of teaching (telling students about) concepts of density and specific gravity. Fuller (1980) has documented the ineffectiveness of these methods, even with college level students in physics.

What does this have to do with higher education? Don't college-age students have well-developed structures, and are they not, therefore, relatively immune to surprises of this sort? And since they are generally far into adolescence, are they not formal thinkers, capable of using purely verbal, symbolic, abstract processes to understand what is presented to them?

The answer is no, in all three cases. First, while college students generally have experience with and knowledge of the physical world, they have rarely been educated to confront and work out discrepancies between casual observations (e.g., wood blocks and battleships, though large, do float), assumptions (large things sink), and what they memorize in school. They often bring with them to college strongly held misconceptions about how things are in the world. We all know it is still possible to surprise college students, no matter how worldly or blasé they may appear to be. For instance, even students with younger siblings are surprised to learn about the capabilities and limitations of infants and young children. They often react by subjecting their siblings (or their own offspring) to extensive developmental testing to verify their new learning, demonstrating Piaget's idea that learning requires activity in the service of equilibration.

Second, use of formal operations by entering freshmen, at least as measured by traditional Piagetian tasks, may be the exception rather than the rule (McKinnon, 1976). Many freshmen are "transitional;" they may reason forma-ly in limited areas, in areas which interest them and where they have experience, or they may use a mix of concrete and formal strategies. At one state university, 50 percent of a sample of entering freshmen scored at the concrete operational level on a Piagetian test battery (McKinnon and Renner, 1971). This is reflected in students' difficulty with seemingly basic concepts such as density in physics, multiple causality in history, or graphs and proportionality in science and math. We also find students unskilled in using processes such as interpretation in literature, separating observation from inference in writing or psychology, and planning experiments in science or social science classes. All of these require formal thought. If instruction does not provide opportunities to explore formal concepts actively, the concrete thinker must rely on rote recall to get by.

Many developmentalists attribute the rarity of formal thought to students' lack of opportunity, during earlier school years, to act upon questions, problems, or discrepancies which they themselves have discovered. Action is both the most natural and the most effective way for young people to learn. Without it there is little or no opportunity to exercise, challenge, and extend the structures and capabilities of thought. The fact that Piagetian programs in high schools and colleges (such as DOORS, ADAPT, SOAR, STAR, and others; see Fuller, 1978, 1980) have succeeded to some extent in reversing the damage done in earlier schooling is the basis for our op-

timism about the developmental approach to instruction. With careful attention to planning and use of developmentally based methods in designing educational programs, we may be able to overcome many of the serious learning deficits we see in students today.

Critique

A major source of criticism directed to Piagetian theory by educators concerns its focus on skills and tasks associated with the natural sciences and mathematics. With some analytical effort, one can see how formal operations are used in writing a coherent essay, analyzing a short story, or understanding themes and patterns in history. However, it is less clear how formal operations relate to creativity and the capacity to visualize or describe a specific concrete experience--skills that are central to the arts and many of the humanities. Recent research on left and right hemisphere specialization (the so-called "split brain" research) is highly speculative and controversial; however, it does suggest that much of what Piaget describes as the movement from concrete to formal operations involves left hemisphere functions. Most of the functions generally attributed to the right hemisphere (intuitive, emotional, spatial, musical) seem to be neglected by Inhelder and Piaget's model.

Does the movement from concrete to formal operations mean the emerging dominance of left hemisphere functions at the expense of right hemisphere functions, or is there a parallel development in the right hemisphere? Are there stages of development in the capacity of learners to be creative, synthesizing information in novel ways, to portray an idea, setting, or feeling in a particularly sensitive manner via paint, sounds, or words? Is there a developmental step beyond formal operations that incorporates both left and right hemisphere functions, or are we seeing differences in individual styles of expression such as those described in Holland's typology (1966)? Certainly capacities of the formal operational thinker such as the ability to generate multiple combinations and to think about hypothetical situations are relevant to creative thought and productions, but creativity seems to demand more than logic.

A final criticism is that Piaget has not, in fact, defined the most advanced cognitive stages. For instance, Arlin (1974) has claimed that problem finding is a developmentally more advanced task than problem solving, emphasized by Piaget. Riegel (1973) has argued that the search for equili-

bration is not a realistic model of thought, but that mature reasoning requires a kind of creative acceptance of conflict. He suggests that a dialectic between formal and sensori-motor or concrete processes (perhaps analagous to left- and right-brain processes in hemispheric lateralization terminology) energizes thought, making it adaptable to situations; this view offers potential for understanding the interplay of cognition and intuitive/affective/creative processes.

In part, perhaps, because their work focused on the logical thought processes of young people, Inhelder and Piaget clearly did not exhaust the possibilities of this vast and challenging domain of inquiry. However, Piaget was certainly not unaware of these questions. He explored relationships between cognition and affect at each stage of development in at least one essay (Piaget, 1968). And a colleague notes that Piaget's seeming inattention to the affective domain was more a result of his deep humility in the face of such processes than a consequence of a belief thay they were unimportant (Papert, 1980).

Teaching Implications

Given what we do know about the movement from concrete to formal operations, several specific suggestions can be made concerning the design of educational settings. First, the Piagetian model of learning implies--perhaps even necessitates--heavy reliance on "hands-on," problem-oriented modes of instruction that provide numerous points of contact with experiences or knowledge familiar to the learner, particularly when learners have not achieved formal operations. Second, research on contemporary college students suggests that a faculty member working with students at introductory levels can assume that the majority are at best transitional. For these students, Piaget's model suggests that a) their future careers will benefit from instruction designed to stimulate formal reasoning, and b) they will learn "content" better if it is firmly grounded in concrete experiences, with formal concepts developed or "constructed" in a joint venture between student, professor, and subject, emphasizing understanding rather than simply "coverage." This in turn means that expectations concerning what can be accomplished in the classroom may need to be revised.

A professor approaching this situation might begin by identifying the central, critical concepts or principles of a course--probably no more than a dozen in all. These principles should then be taught using hands-on experiences, multiple examples, laboratory problems, and applications in numerous contexts to provide the necessary concrete foundation for understanding. Terminology, theoretical models, or symbolic representations of relations can be introduced more effectively once the concrete foundation is established. Later concepts may need less emphasis on the concrete if earlier ones are firmly grasped. In some cases, formal concepts are actually learned more quickly with this approach, as in the case of a philosophy professor teaching logic in an ADAPT course (in Fuller, 1978). Less central concepts may be covered through readings or modules using various forms of instructional technology (slide/tapes, computer-assisted instruction, videotape or videodisc, etc.).

To the extent that a faculty member dwells on the presentation of specific facts and tests for the acquisition of details (dates, statistics, events, outcomes) where there is no clear reason for memorizing these, students will not be encouraged to move toward formal operations, but will instead be rewarded for using learning strategies that enable them to remain at the concrete stage. They will have covered more but will learn less, in the sense of retaining and integrating knowledge in a meaningful way.

Some of the students in a college classroom will be using formal operations: they will learn from the initial presentation of abstract concepts and will not need the extensive background required by concrete or transitional learners. These students can check or consolidate their learning by helping other students, so long as they are willing to do so, and are able to refrain from "giving the answers" to their less fortunate peers. Of course, whether or not this will succeed depends greatly on the social environment of the classroom and the norms of the institution. Traditionally, students devalue the potential for learning from peers; while desirable, these arrangements require special sensitivity if they are to work well. The professor also may consider meeting the needs of more advanced students by increasing individual options within the course structure. Some students might attend special sessions where principles are expanded upon, or might be given additional and more challenging problems to work out, perhaps with access to a tutor.

For both concrete and formal learners, laboratory experiences provide flexibility needed to meet the needs of a heterogeneous group. Faculty in the sciences often combine lectures with laboratory experiences to convey principles; laboratory-style experiences might similarly be established in the humanities and social sciences to complement lectures. Studio work in the arts, participation in theater performances, translation of a short story into a newspaper article or televison screen play (or vice versa), writing musical compositions within certain parameters or using kitchen utensils or microcomputers for instruments can provide lab-like experiences in humanities and fine arts disciplines. Lab experiences can also be designed in history (compare original documents with later writings about them; do research on local history using primary documents) or philosophy (make an ethical choice and defend it). In any discipline, laboratory experiences must avoid "cookbook," here-is-how-to-do-it approaches. Emphasis should be on exploration, experimentation, and identifying and solving problems at least partially selected by students. Group work is valuable to stimulate exchange and critique of ideas in a peer-centered (as opposed to authority-centered) situation.

A model which has proven useful in a variety of programs is the Learning Cycle, developed by Karplus (1974) for public school science teaching and adapted by Fuller and others (1978, 1980) for use in a variety of disciplines at the college level. The ADAPT program at the University of Nebraska-Lincoln provided a model followed in recent years by several other institutions. Fuller and associates (1978, 1980) provide descriptions of learning cycles in disciplines ranging from algebra to economics, literature, and philosophy--essential reading for anyone who intends to pursue this approach. The Learning Cycle model is briefly summarized in TABLE 2. Kurfiss (1982) provides suggestions for effective use of the model.

TABLE 2

The Three Phases of the Learning Cycles Model*

1. Exploration

   In this phase, students are provided with structured opportunities to explore the "raw data" relevant to the concept to be learned. "Hands-on" experiences, opportunities to sort or categorize examples, experimentation with materials illustrating variations on a theme, recall of related experiences--all can be used to focus the student's attention on the concept. The key is to provide a base of experience which will allow the student to relate the concept to something "real" in his/her world, and which may also lead the student to question previously acquired knowledge.

2. Invention

   If the exploration phase has been properly structured, students will make discoveries or will have questions about the concept. When the instructor sees that they are ready to crystallize these discoveries, the process shifts from exploration to identification of the observations, principles, rules, or other regularities which the students have found. The teacher will want to guide but not dominate this phase; often it will be best to provide terminology only when students have clarified the ideas to which labels are to be applied. The invention phase stresses induction of general ideas from a variety of particular experiences, past and present.

3. Application

   In this phase, students are encouraged to search out or work with other examples of the newly discovered/invented concept. These may be teacher or student generated, or both. The application phase may involve a new, concrete experience using the concept in a novel way. The idea is to help the student generalize from the particular instance just learned to broaden his/her understanding of other circumstances or situations in which the concept applies.

*Based on the work of Robert Karplus (1974); adapted from Fuller (1978, 1980)

PERRY: EPISTEMOLOGICAL DEVELOPMENT

The Theory

While Piaget chronicles development of ability to use logical thinking, William G. Perry, Jr., has chronicled the evolution of beliefs about what constitutes knowledge, truth, and fact, and the role of authorities in defining and conveying knowledge. The later positions shift to issues arising from the problems of making commitments in a relativistic context as epistemological reflection generalizes to personal choice and action (Perry, 1970). His "positions" share some characteristics with Piaget's stages; for example. they are orderly in their sequence, both logically and psychologically (Kurfiss, 1975, 1977). The more advanced the position, the more likely it is to require formal reasoning. The processes which are presumed to stimulate development include disequilibration; more will be said of this shortlv.

Although Perry's original work identified nine positions, grouping these into four major periods makes the scheme more manageable and accessible on first exposure. These periods are somewhat arbitrarily defined, since the positions shade gradually into one another; for those who intend to pursue the topic further I have indicated specifically which of Perry's positions I am including in the four periods below.

I. Dualism (Perry's positions 1 and 2): For the Dualist, knowledge is absolute; there is Truth and Falsity, Right and Wrong, Good and Bad. "For every question there is a simple answer" would be a characteristic Dualist statement. Authorities are those who have the Answers. Disagreement among them is unthinkable--facts are facts! Belief systems are not chosen, they are given--unquestioned, unanalyzed backdrops to the student's experience.

II. Multiplicity (Perry's positions 3 and 4 Multiplicity Correlative): Most knowledge is still viewed as absolute, as in Dualism. But in some fields or on some questions, we don't have all the answers--yet. We see a hedging admission that knowledge does have its grey areas, and authorities may not be infallible. But the reaction to this realization may be rather anti-establishment. Values? Ideology? Why have any? Just do what seems right at the time; "Go with the flow." In response to a low grade on an essay exam, a student may contend that since there is no one right answer, all we have is opinion, and one opinion is just as good as another. This form of epistemological nihilism is particularly common among sophomores.

Liberal educators may realize their greatest potential influence by developing strategies to overcome the tendency for this belief structure to persist through graduation. A common path out of this position is to attempt to discover and use the "rules of the game" to the students' best advantage. Thus, presentation of a balanced, documented "opinion" in a paper may become a strategy for managing the grey areas, but one adopted only to satisfy the instructor and get the grade. The irony is that the tools of independent thinking are acquired as the student discovers and seeks to conform to "what the professor wants," as Perry (1970) wryly notes.

Regardless of motives, however, the student who can articulate principles for the use of critical thinking processes has already slipped into the next position.

III. Relativism (Perry's 4 Relativism Subordinate, 5, and 6): As noted above, and given the right conditions, students will begin to discern patterns or regularities in the way their professors (and others) approach grey areas of knowledge. They may recognize such strategies as analysis of evidence, comparison of interpretations, or designing experiments. At first this recognition may come in a limited area of study, but at some point a flip-flop occurs and the student comes to view the grey areas as the rule rather than the exception. Procedures for negotiating within uncertainty begin to be articulated by the student (e.g., "I try to present a balanced view, look at the evidence on both [or all] sides, and then come to a conclusion that seems most reasonable."). The context within which facts are viewed is recognized as having a bearing on how those facts will be interpreted. Authorities are now recognized as fellow seekers of understanding, different primarily in that they are experienced at making sense of the profusion of knowledge in their fields. During this period, students may feel that belief systems are difficult to think about because so many good arguments exist for any one approach, "no matter how you look at it."

Toward the end of this period (Position 6), they begin to experience the necessity of choosing despite the difficulties involved. They also realize at some point during this period that this state of affairs is relevant to their own life choices, a disconcerting discovery for many.

IV. Commitment in Relativism (Positions 7, 8, and 9): Skilled in rational (formal operational) processes and drawing upon the accumulated learning and experience of the college years, the student can commit herself to the opinions, ideologies, values, and interests with which she will identify. Recognition of the fallibility of her choices, acceptance of responsibility for their consequences, and willingness to accept others' right to their own choices characterize the commitments of the Relativist. There is full recognition that choices restrict one from some choices and open the way to others; there may be sadness accompanying specific decisions as well as positive feelings and apprehension about the future. Commitments may not be made all of a sudden, though a gradual realization that a particular direction is being taken may occur. A student may reaffirm or reject old beliefs; either way, the decision is based on a conscious consideration of alternatives as opposed to the blind acceptance of the Dualist.

Throughout these four periods we again see the trends which recur in developmental models: from concrete and simplistic to abstract and complex thought processes; from absolute to relativistic belief systems, and from external to internal control, as the student increasingly reflects upon and takes responsibility for actions, choices, and the selection/formulation of a world view.

What characteristics of college environments contribute to the changes documented by Perry and others? Perry (1970) suggests that students' growth is enhanced when we create the sense of being participants in a "community of scholars." In such a community, students observe and engage with faculty in a variety of contexts, all of which encourage critical analysis, empathetic discussion, and reflection of ideas, information, and choices. Many independent colleges provide ideal environments in this respect, and there is considerable evidence that students who participate in this type of community do progress more rapidly, on a variety of measures of maturity, than do students who do not become thus engaged (Chickering, 1974; Chickering and McCormick, 1970; Winter, Stewart, and McClelland, 1981). Characteristics of college settings which appear to encourage epistemological development include the following:

1. Faculty openly expressing doubt rather than adopting an authoritative stance; willing to consider the ideas of others but able to provide a rational defense of their own position(s).

2. De-emphasis on rote learning, lecture teaching, and "objective" testing; students expected to defend ideas through critical analysis.
3. Faculty available for and open to interactions with students.
4. Disagreement and lively debate about ideas among students and between students and faculty encouraged. For instance, argument over personal values might be expected to take precedence over gossip, television, or fashion as topics of conversation (Kurfiss, 1975, p. 97).

Disequilibration is also relevant to the question of transition mechanisms in Perry's model, particularly for students in Dualistic or Multiplicity positions (1 through 4 M.C.). An optimum amount of disequilibrium is generally considered to be induced by stretching the student to consider ideas approximately one position beyond his own. This is termed the "+ 1 principle" by developmental psychologists. Applying this concept we hypothesize that for development to occur, Dualists must be helped to discover that authorities disagree and that often there is no single right answer, while students in Multiplicity must discover that although there are not always right answers, authorities do have methods useful in studying and comparing ideas. Relativists can benefit from observing that although commitments are difficult, people do make them; and authority figures persist in making judgments and defending them even while tolerating--even welcoming discussion of--the views of those who disagree. They can even remain friends through their disagreements--sometimes! And they can give you an "A" on a well-reasoned paper even if it presents a view completely contradictory to their own.

Creating disequilibrium about such fundamental assumptions requires the counterbalancing influence of supports appropriate to the concerns likely to be salient at each position. This may be especially true for some Dualists, who may reject or deny the possibility that truths long held are not absolute, or whose concrete way of thinking may be too limited to handle the complex differentiation of ideas demanded by many college courses. In the later periods, Relativism and beyond, disequilibrium may be less important than guidance, encouragement, objectivity, and support for those facing major life decisions such as choice of a major, or whether to get married, move away from home, or even transfer to another college.

Although Perry's initial study and validating sample drew from a rather restricted population (Harvard males, traditional-aged, during the

late 50s and the 60s), subsequent research has provided evidence of the relevance of the sequence in other settings. For instance, the sequence and cohesiveness of the positions were experimentally validated using a sample of sophomores and seniors at a large state university (Kurfiss, 1975, 1977). Clinchy and Zimmerman (1981) have found the scheme provides a useful framework for studies of women's development in a women's college, although they note some differences from men's experiences. Goldberger (Goldberger, Marwine, and Paskus, 1978) has used it with young students, and Daloz (Daloz, Noel, and Miller, 1980) has studied its relevance for reentry students in a nontraditional setting; he and his colleagues have found the scheme useful as a guide in counseling, guidance, and program planning for both men and women.

Progress in other settings may not be as rapid as it was in the Harvard sample, but the assumptions and behavior of students have changed little over the intervening years. Many researchers find modal positions of freshman at around Position 3, the pivot-point from Dualism to Multiplicity; seniors may be Relativists yet not have a strong sense of Commitment (as found, for instance, among Clinchy and Zimmerman's students, 1975).

Critique

The use of Perry's scheme in both research and teaching has been hampered by the lack of consistency within individuals that would enable practitioners to make global judgments or ratings of an individual's level of functioning in this domain. To be useful as well as accurate, an assessment must consider the differential development that is likely to occur in specific contexts encountered by the student. Students are likely to be more advanced in areas of interest and expertise (for instance, their major academic area or a favored avocation) than in areas of relative ignorance, disinterest, or inexperience (Kurfiss, 1977). Even among professional adults we find dualistic attitudes with respect to disciplines other than their own. For instance, Cronbach and Meehl (1952) note that psychologists tend to believe physicians can always confirm or disconfirm their diagnoses simply by opening up the patient. This is, of course, not possible for clinical psychologists, so they are far more relativistic about their own diagnoses than the physicians'. Perry interviewers often find that students who accept a relativistic world view in literature or political science firmly believe that in biology, history, or mathematics, "They have all the answers."

The lack of consistency in rates of progress is often compounded by another phenomenon, the fact that when entering any new and challenging situation, people tend to use earlier positions, at least temporarily ("functional regression," noted earlier). Entering college or starting a new job can easily stimulate such back-pedalling. Thus any cross-sectional slice of an individual's development will show a complex, mixed, and highly differentiated picture of intellectual and ethical development. Perry uses the image of a spiral to capture the sense of non-linear expansion as the individual matures. Nonetheless, many professional educators have found that with practice, they can detect stage implications in students' words and emotional reactions, and have developed skill in responding appropriately.

Teaching Implications

Nothing so complex as the maturing human intellect is likely to be captured in a single theoretical model. Yet the framework provided by Perry has proven to be a rich source of stimulation for practitioners both in student services and faculty development (Parker, 1978). Perry's theory has precipitated a wealth of research on the teaching/learning process in college settings, and on relationships between intellectual development and other descriptors such as ego development using Loevinger's scale (Goldberger et al., 1978) and learning style as measured by Holland's typology (Cornfeld and Knefelkamp, 1977). The intellectual progress charted by Perry also can be shown to parallel Erikson's description of the four periods of identity development (Kurfiss, 1981), as will be discussed later.

Next we turn to the curricular and instructional implications of Perry's analysis. While assessment of progress along the Perry continuum has posed significant methodological problems, researchers have been able to demonstrate that educational experiences taking "Perry level" into account do enhance developmental processes (Widick and Simpson, 1976). Further, the Perry scheme has been used effectively for several years as a faculty development tool at the University of Minnesota (Parker, 1979). Related assessment procedures involving analysis of students' use of relativistic thinking skills have recently enabled researchers to identify differential outcomes for three types of colleges: a two-year community college, a four-year state teachers college, and a liberal arts institution (Winter, Stewart, and McClelland, 1981). Although entry characteristics of students in each setting differed, statistical analysis suggested that changes in critical thinking and flexibility in the use of argumentation

skills, as well as indepedence of thought, could not be due to entry differences alone. This research supports the proposal that college settings can be enhanced by deliberate design to favor developmental outcomes, and that progress toward developmental goals can be assessed.

The most detailed translation of Perry's framework into a working model for instructional design is provided by Knefelkamp (1981). The model takes seriously the students' task of making sense of the world, a large part of which is the classroom. The ego-threatening nature of classroom learning experiences is squarely acknowledged; the instructor is challenged to create a learning environment that provides sufficient stimulation to explore new areas of knowledge and of self, with sufficient support to keep the students' anxiety about the process at a manageable level. Assessment of students on a variety of measures, both cognitive and affective, is recommended, although not always possible. The data are analyzed in light of students' perceptions of such classroom issues as roles of student, faculty, and peers; evaluation processes and the nature of knowledge; abilities; and probable areas of challenge and support. The learning environment is then analyzed in terms of four continua of challenge and support, described by Knefelkamp (1981, 1982):

1. Degree of structure, defined by Knefelkamp (1981) as the "amount of framework and direction provided to students," in the form of instructions, guidelines, practice sessions, and use of relevant examples.
2. Degree of diversity, construed as amount and complexity of tasks, information, perspectives, or methods offered or required of students.
3. Degree of experiential (as opposed to "vicarious") learning provided.
4. Degree of personalism provided; that is, how successfully has the spirit of the "community of scholars" been recreated in the classroom.

Subject matter and course goals are assessed as well, and both teaching and evaluation methods are self-consciously planned to create a balance between student needs for content learning and desired development goals defined by faculty and/or students. The model has been applied in a variety of disciplines with considerable success. Cornfeld and Knefelkamp have also balanced stage information with styles as described by Holland (1966) to address diversity within levels.

One serious problem that arises is that of student heterogeneity: How do you teach a class for students at two or more different developmental levels? Knefelkamp (1982) recommends, based on numerous studies of contemporary undergraduates, that the instructor assume students are either late Dualists, entering Multiplicity, or in transition between the two. The course can then be designed to encourage both recognition of multiple perspectives and ways of thinking about and comparing perspectives.

Students should have opportunities to express their views both in writing and in groups, but should always be expected to explain why they think as they do. Supports can be provided by explaining why this type of analysis is necessary, which incidentally provides a consistent role model on the part of the faculty member, and by explaining the purposes of assignments and activities in such a way that students at various levels can tune in on the rationale that addresses their concerns. For instance, when using small groups with Dualistic students, it is wise to instruct them to take notes and to listen for knowledge contributed by their peers (Knefelkamp, 1982). To reinforce this instructional set, the professor should visit the groups to lend her authority to the enterprise, but must refrain from correcting or pontificating in answer to students' questions. She should, however, emphasize points made by students ("That's interesting; I hadn't thought of it that way before.") or, redirect discussion to bring in quiet members. Supports such as these give students the opportunity to learn what it means to "think with" others and encourages their recognition of themselves as participants in the process of making sense, rather than recipients of the predigested learning of others.

ERIKSON: IDENTITY AND PSYCHOSOCIAL DEVELOPMENT

The Theory

Erik Erikson, a psychoanalyst concerned with the tension between psychological needs and social constraints, has proposed a developmental sequence based on age-related issues and extending across the entire life span. In each of Erikson's eight "ages," a particular conflict or tension must be addressed. The ages, beginning in infancy and evolving through the life span, address the following issues: trust vs. mistrust; autonomy vs. shame and doubt; initiative vs. guilt; industry vs. inferiority; identity vs. role confusion; intimacy vs. isolation; generativity vs. stagnation; and integrity vs. despair. FIGURE 2 shows how Erikson construes the relationships between these eight issues and the individual's overall development. In any given period, one issue is usually predomonant; that is, the individual experiences heightened vulnerability and potential in that area (Erikson, 1968). A resolution on the negative side is not necessarily permanent, but can slow progress on later issues since, as the diagram shows, each builds on those preceeding it as well as influencing those to follow.

While not a cognitive theory, Erikson's developmental blueprint is helpful in designing a supportive context in which learning can take place. It also suggests issues which are likely to be salient for learners in various life stages, though not in as much detail or with the empirical support of more recent adult development models. However, his views on identity development, which peaks during late adolescence, are especially well developed, and have received considerable empirical support in recent years (Constantinople, 1969; Marcia, 1966; Adams, Shea, and Fitch, 1979). Since identity is a crucial issue for many college students, both traditional and non-traditional, acquaintance with the characteristics of this period can be helpful in educational planning. Finally, as mentioned earlier, Erikson's model bears a close relationship to Perry's; clarification of the parallels may provide insight on the intellectual (and hence academically "treatable") level about what may appear at first glance to be purely psychological issues normally considered outside the realm of appropriate (and comfortable) areas of interaction with students.

Since all the eight issues remain at least somewhat salient throughout life, we can consider their implications for the identity-level student in various learning situations. For example, TABLE 3 suggests ways in which

FIGURE 2

Erikson's Eight Ages*

	1	2	3	4	5	6	7	8
VIII								INTEGRITY vs DESPAIR
VII							GENERATIVITY vs STAGNATION	
VI						INTIMACY vs ISOLATION		
V	Temporal Perspective vs Time Confusion	Self-Certainty vs Self-Consciousness	Role Experimentation vs Role Fixation	Apprenticeship vs Work Paralysis	IDENTITY vs IDENTITY CONFUSION	Sexual Polarization vs Bisexual Confusion	Leader- and Followership vs Authority Confusion	Ideological Commitment vs Confusion of Values
IV				INDUSTRY vs INFERIORITY	Task Identification vs Sense of Futility			
III			INITIATIVE vs GUILT		Anticipation of Roles vs Role Inhibition			
II		AUTONOMY vs SHAME DOUBT			Will to Be Oneself vs Self-Doubt			
I	TRUST vs MISTRUST				Mutual Recognition vs Autistic Isolation			

tasks or courses requiring problem-solving can be structured to minimize "psychological interference" in the students' attempts to address an intellectual problem. Erikson's framework can also be used to guide selection of specific issues or topics to emphasize. For instance, themes of love and identity are likely to be salient for young people; older, returning students may be more concerned with issues of caring for others (generativity) or integrating the various strands of life (integrity). Chickering (1981) offers numerous suggestions on this topic drawing from a variety of models of adult development.

Because of his keen interest in identity development, Erikson examined that period in depth in several of his writings. He formulated the concept of a "psychosocial moratorium," a period of exploring personal alternatives and of deliberate avoidance of enduring commitments while the young adult seeks "a niche which is firmly defined and yet seems to be uniquely

*Erikson, 1968, p. 94.

TABLE 3

Supportive Structures for Problem Solving Activity

An Eriksonian Checklist

Basic Trust

Can the student trust the environment to support and to yield to efforts to influence it? Is the environment predictable and controllable in known and significant ways?

Autonomy

Is the student given some opportunity to exercise his/her will? Is the student given some real choice about either: a) whether, when, or how to approach a problem? b) which of several problems to approach?

Initiative

Is the problem such that the student's curiosity can be aroused by it? Can a starting point be discovered that will lead the student into further exploration? Does the problem present a significant yet approachable challenge, as opposed to an overwhelming complexity?

Industry

Is the problem structured so that sustained effort will be rewarding, so that working through obstacles and frustrations will be satisfyingly productive? Does working the problem enhance the student's understanding of and/or facility with the technology of his/her society?

Identity

Is the problem structured to involve sufficient risk that solving it confirms the student's sense of self in meaningful ways? Does solving the problem have the potential to clarify or enhance the student's perception of himself or herself as capable of meeting challenges effectively? Does it provide a developmentally appropriate opportunity to experience the rewards of investing the self in interaction with the artifacts of the society?

Intimacy

Does the problem-solving context provide opportunities to learn with and from peers?

Generativity

Are there opportunities for those who have special skills or understanding to share those with others and to help others grow in their own abilities?

Integrity

Does the process build the student's experience of continuity with an earlier self and enable the student to feel "wholeness" or "oneness" with rather than alienation from that self? Where wholeness is necessarily challenged by the nature of the task, are supports provided to balance this stress?

made for him" (Erikson, 1968, p. 156). This relatively sensible approach to the emerging challenges of adult life contrasts with a response Erikson terms "identity role confusion." Here the pulls and demands become overwhelming and can, in extreme cases, lead to various forms of psychological paralysis. Some young adults, of course, never seem to recognize the predicament they are in. They coast in a world not entirely of their own making, but one defined largely by powerful, usually adult, authority figures. Some voluntarily adopt in toto the ideologies of cult leaders or other surrogate authorities, apparently in retreat from newly perceived social demands. These individuals experience a kind of psycho-social "foreclosure." These three variations within the identity period, as well as successful ego identity achievement, have been observed among normal college student populations (Marcia, 1966; Podd, 1972; Adams, Shea and Fitch, 1979). TABLE 4 relates these four periods to the four major periods outlined above with respect to Perry's theory of development in college.

Critique

The themes of Erik Erikson have been widely accepted and used by child development practitioners, as well as by faculty in the humanities, for many years. The film "Wild Strawberries" created by Ingmar Bergman, lends itself well to analysis in terms of Erikson's model (Erikson, 1976). However, behaviorally-oriented psychologists take exception with the psychoanalytic bent of his theories and to the inferential rather than observational basis of his conclusions. How do you "operationalize" an "identity"?

Although the concept of Identity (like the concept of Commitment) is very global, efforts to clarify and assess it have been successful. As we have noted, students tend to be working on a variety of issues simultaneously in their lives, progressing at different rates in different areas. Therefore, researchers using both the Perry model and the Eriksonian perspective have found it useful to design assessment instruments that examine specific aspects of the overall process. Marcia's system (1966) and Adams' Objective Measure of Ego Identity Status (OM-EIS; Adams, Shea and Fitch, 1979) probe specific issues such as occupational identity, religion, or marriage.

TABLE 4

Relationships Between "Psychosocial" (Eriksonian) and "Epistemological" (Perry) Models of Adolescent/Early Adult Development*

I. Foreclosure ≈ Dualists

Students in Dualism and Foreclosure share a restricted view of the world, a tendency to accept parental and other authority views without question, and a desire for easy answers to complex questions. Political beliefs, values, career choice, and many other aspects of identity may be foreclosed, that is, accepted as "real" without any questioning ("crisis," in Eriksonian language) of their validity for the individual.

II. Diffusion ≈ Pre-relativist

These two share an inability to sort out the "chaos" which is just beginning to be perceived. For one, chaos is in terms of the plurality of truths; for the other, the terms are life choices, value options, heros to identify with, and other psychological issues.

III. Moratorium ≈ Relativist

Both are actively exploring alternatives, using rational processes, and consciously delaying commitments until they "feel ready." The term "Identity Crisis" refers to the final throes of this process.

IV. Ego Identity Achiever ≈ Committed Relativist

Both have made conscious choices about who and what they are/will be, although certainly not necessarily in all areas of life.

*From Kurfiss, 1981.

Like any other model of development based on the experiences of a particular culture, Erikson's metaphor of the life cycle can be challenged as potentially ethnocentric. For instance, there is evidence that the Identity "crisis," takes a different form, or may not occur at all, even in other Western cultures (McNassor, 1967). In fact, it is likely that the crisis is not experienced by many youth even in our own society. We lack sufficient cross-cultural longitudinal data to respond one way or another to this criticism, although data exists to show that college and non-college youth are not comparable on developmentally relevant dimensions (Trent and Medsker, 1968).

On the other hand, compared to other developmental models, Erikson's theory is far more sensitive to ethnic and sex differences, and to the impact of major social and cultural forces on the developing individual. He explicitly addresses the developmental experience of blacks (Erikson, 1968). And a growing body of evidence supports his observation (1968) that women's identity development progresses differently from men (Fitch, 1981; Grotevent, 1981). Erikson's writing on the lives of G. B. Shaw (1968), Luther (1958), and Gandhi (1969) reveal his attention to the interplay of internal and external forces.

Teaching Implications

What kinds of experiences can the college environment provide to encourage healthy identity development? Erikson describes the role of developing "Fidelity" (1965) in making mature identity possible. Fidelity is the ability to invest oneself in a task, person, issue, etc.: it is a precursor to the full-blown commitment which marks Identity Achievement. Opportunities for such trial commitments are developmentally appropriate for Moratorium students, and they will create them if they are not provided (witness the massive student movement in the 60s). Internship programs lasting a term or longer enable them to test their ability to stick with a challenge. On the other hand, Foreclosure students may benefit from less intensive experiences, which encourage them to try out or observe roles or occupations they had not considered for themselves. To insure their attention to and involvement in these experiences, supports should be built in. These might include allowing the person to select experiences freely, to attend with friends, and to work with adults he or she can identify with.

Diffusion students are likely to drop out of (and into) classes, programs, and college itself and hence may be difficult to engage or motivate. Perhaps these students are most likely to find something of value in course material that focuses directly on Identity as an object of study. Of course, the prevalence of Identity and Intimacy issues in the traditional-aged student population suggests these would be themes of interest for the majority of those students, though their incorporation into the curriculum would of course need to take different forms at different points in any particular program.

One of the practical implications of Erikson's stage theory concerns distinctions between the psychological--and educational--needs of 18-22 year old learners and older adult learners. For instance, while the younger adult learner may be most interested in a course that addresses the issue of identity, the older student might find such a program to be of little value, instead being attracted to a program in which generativity is evoked. The mature student may benefit from serving as a tutor or career counselor to younger students, or offering an internship rather than taking one himself. In the process the older student learns more about his own job by being encouraged to reflect on and discuss the job with young interns. The intern brings a "theory rich/experience poor" background, while the older student who is offering the internship brings a "theory poor/experience rich" perspective. The two have much to gain from one another. Their developmental stages, in terms of Erikson's theory, are compatible, allowing for the "mutual regulation" that he sees as an important process in psychosocial development (Erikson, 1968).

Several other suggestions emerge from Erikson's theory that are directly applicable to the college classroom and the traditional-aged student. First, the college classroom should reflect Erikson's observations that all past and future stages of development are reflected in the present stage. Thus, an educational experience should be diversified and reflect a variety of development themes, while focusing on the primary developmental tasks of the predominant age group in the classroom. A college curriculum should anticipate future stages of the student's development, while providing a basis for reflection on and distillation of the learnings from the student's previous stages of development. From classroom exercises, questioning techniques and assignments stressing connections and relationships

to curricular designs that stress integration of psychological concerns with social realities and potentials, a vast continuum of possibilities for developmentally stimulating instruction can be envisioned.

Eriksonian theory emphasizes the role of constructive tension between inner and outer forces; the working out of these conflicts is never an emotionally sterile process. Thus faculty would be wise to be sensitive to the interrelationships between academic and personal development. Erikson reminds us that we cannot separate the head from the heart. He encourages us to pay attention to the ways in which emotional and interpersonal needs provide a substructure for learning of a more cognitive nature. Thus, a faculty member should be just as concerned about her role as an advisor as about her role as an instructor and should teach principles and processes in her discipline through themes and experiences that relate directly to the student's developmental concerns.

Finally, and perhaps most importantly, Eriksonian theory would encourage us to look carefully at the "moratorium" that 18 to 22 year old students seem to need in their lives. Do we provide safe places in which students can test out alternative identities, alternative life styles, and alternative value systems? How do we encourage this exploration without condoning unethical or irresponsible behavior? Clearly, this safe place must include sensitivity to Sanford's (1966) concept of providing support as well as challenge.

The factor of trust seems to be crucial. Students must trust the intentions as well as the competencies of faculty if they are to explore alternative structures and styles during this moratorium. They may never have another opportunity in their lives to explore alternatives with both relative freedom and relative maturity of vision. A college teacher misses a tremendous opportunity for both personal and professional satisfaction if he or she does not strive to be available as a sensitive resource to students at this point in their development.

Implications for Faculty Development

The theme of generativity emerges for faculty as well as for students, and is relevant in planning for professional development programs. Whereas most people in our society move into the role of teacher or mentor to younger people when they reach the stage of generativity, the college faculty member (as well as elementary and secondary school teachers) is

placed in the teaching role much earlier in his career. At this developmental stage, according to Erikson, there is little dominant concern about such generative issues as conveying something of one's self, one's experiences, and one's heritage to the next generation. Baldwin's research (1981) suggests that professional contributions may be a more pressing concern at this time, and workload pressures are as great during this period as any other. Can a teacher be an effective mentor, when she is still working out a professional identity, perhaps still being guided by her mentor?

Unfortunately, pleasure from teaching declines gradually over the course of the professorial career (Baldwin, 1981) during which--according to Erikson--generativity should be increasing. Almost paradoxically, teaching, in liberal arts colleges at least, maintains a high degree of importance throughout this time. How can this information be used in designing professional development programs for faculty? The decline in pleasure from teaching may reflect a lack of freshness or direction, which could be counteracted by varying the tasks involved, stimulating the faculty member's sense of generativity.

Generativity may be provided when experienced faculty are given opportunities to teach in a new area or new environment, thereby breaking out of old habits and roles. Serious career questioning seems to be most common late in the assistant professor phase and also during the pre-retirement years. Faculty who are especially susceptible at these points might be encouraged to try new approaches to teaching, particularly if they can see that these approaches are based on empirically sound theories of how human beings move toward their potential. Interdisciplinary teaching may, in part, be the answer. Alternatively, faculty might be given an opportunity to teach at another college or outside a college classroom (corporate training, high school teaching, consultation/training with city or state officials and staff, etc.) (Furniss, 1981). Faculty may also welcome opportunities to serve as mentors to younger faculty. For younger faculty, Baldwin suggests allowing them to teach specialized upper-division courses to capitalize on their professional currency and desire to share this crucial aspect of <u>their</u> identity. For all faculty, increased knowledge of students and their development may help make teaching and advising more satisfying, challenging experiences.

KOHLBERG: MORAL DEVELOPMENT

The Theory

As students address issues of identity, they invariable come up against moral and ethical issues which they must learn to resolve. We will examine one of several stage theories in this area, recognizing that others exist and have merit. However, Kohlberg's theory of moral development has demonstrated considerable explanatory power. It also lends itself well to application, as the stages are relatively distinct, although students may use reasoning from more than one of the stages in discussing various issues.

Lawrence Kohlberg (1958) created a novel research paradigm to study the development of moral thinking. He presented subjects with short, anecdotal dilemmas and then analyzed the patterns which emerged in the reasons they gave for their choices on a particular issue. The classic case is that of Heinz and the druggist. Heinz must decide whether to steal a drug which can save the life of his ailing wife. The druggist, of course, has refused to extend credit and is making a large profit on the medication. Other dilemmas involve euthenasia, faithfulness to a paralized spouse, and reporting of a reformed criminal who has escaped detection by authorities.

By now the reader can probably anticipate the general outlines of the Kohlberg stage progression. Initially concrete and egocentric, the young moral philosopher uses increasingly general and relativistic reasoning. Kohlberg divides the sequence into three major periods each with two substages, as follows:

I. Pre-conventional

1. Punishment/obedience orientation. Right and wrong are defined in terms of whether or not an act is punished. Goodness is obedience (without question) of authority. An early childhood orientation.

2. Market place orientation. Right is what helps me get what I want from you. Good is that which provides hedonistic pleasure. Later childhood (often seen in juvenile delinquents).

II. Conventional

3. Good boy/girl orientation. Conform to the expectations of those who care for you in order to earn their approval.

4. Law and order orientation. Obey the laws, maintain--even defend--the social system, and abide by majority rule.

III. Post Conventional

5. Social contract orientation. Laws are made by members of a society and can be changed by them, particularly where

injustices are or have been perpetuated by old laws. Citizens implicity agree to abide by a social contract as participants in their society. The U.S. Constitution expresses this type of morality.

6. Orientation to universal ethical principles. There are some principles and rights that are overriding, e.g., justice, honesty, equality, life. It is on this basis that social relativists (Stage 5) argue that a law is "unjust"--it violates their sense of what is universally "right"--although they might claim that there are no absolutes. Civil disobedience is justified when the "system" fails to respond to claims of injustice.

Rest (1973) has demonstrated that while we can understand all stages up to and including our own, and in some cases one above that, comprehension of reasoning two or more states beyond our own level is rare. Furthermore, when confronted with more advanced reasoning that we cannot understand, we translate or assimilate it to something we can understand, in other words, to a lower-stage reasoning. Rest found that we tend to reject or disapprove of reasoning below our own level. The net effect of all this is neatly illustrated in the case of the Berkeley "Free Speech" demonstrations of the 1960s. Among the demonstrators were students using both Stage 2 ("I have a right to say what I want; the administration can't tell me what I can and can't do!") and Stage 6 ("Freedom of speech is a basic human right.") reasoning. Stage 4 observers could not hear the Stage 6 arguments as such, but they could understand the Stage 2 reasoning --and quite naturally condemned all those protesting. Interestingly, a higher proportion of Stage 6 demonstrators were arrested than any other group (Haan, Smith, and Block, 1968), illustrating Kohlberg's claim that the higher the stage, the more congruence between belief and action. Furthermore, Stage 5 individuals tended to function as mediators, attempting to translate the Stage 6 arguments of protestors into language which would be appreciated by Stage 4 observers.

Critique

During the past decade, several major criticisms have been voiced by theorists and practitioners who have studied Kohlberg's model. One of Kohlberg's colleagues, Carol Gilligan, has questioned the applicability of this model to many student populations. Gilligan (1981) finds that Perry's model, which explicitly recognizes the dilemmas of context, provides a missing link in understanding the full range of moral development.

"Context" in most moral dilemmas means the consequences for and feelings of those human beings touched by the situation. In Kohlberg's model, use of such information in moral reasoning is viewed as "concrete," not universal in nature, and hence not indicative of the "highest," i.e., most abstract, stages of moral judgment. Thus women, who tended to use such reasoning more often than men, were scored at Stage 3 or 4 more frequently than men. Yet in her work with women contemplating abortions, Gilligan found that while they could use abstract and universal principles when discussing moral issues, when they dealt with very real and complex situations, they necessarily considered concrete circumstances and feelings as part of their analysis (Gilligan, 1977). She reasoned that to call this "lower-level" reasoning or a sign of "regression" was to do violence to what is, in fact, a very highly developed, emphathetic approach to moral questions. Gilligan concludes that Kohlberg's theory is in need of significant revision in order to take these criticisms into account.

Kohlberg is often criticized because he focuses on moral reasoning without attempting to relate this reasoning to actual behavior. Some research has supported his claim, noted above, that at the higher stages, congruence between belief and action is greater than at lower stages. While moral reasoning and moral behavior are no doubt intertwined, the latter requires emphathy, personal integrity, self-sacrifice, and courage as well as reasoning ability. These "nonrational" characterists are also developmental in nature (Loevinger, 1976; Weathersby and Tarule, 1980); the precise quality of the interaction between these characteristics remains to be clarified.

Kohlberg also proposes that the highest level of moral reasoning may prescribe behavior that violates specific laws and/or societal norms (as in the case of civil disobedience). While this perspective is compatible with a western conception of justice and personal responsibility, it may limit cross-cultural applicability of Kohlberg's model, for in many cultures, individualistic decision-making is considered inappropriate and destructive, the group being the ultimate arbiter of morality. Furthermore, while Western culture claims to value human life above all else, other cultures feel that life is not worth living when one is deprived of one's land. Educators must be sensitive to these and other differences if they are to use a Kohlbergian framework to prepare students--both domestic and international--to live in an increasingly international community.

Teaching Implications

While Kohlberg's model is not without its flaws, when its weaknesses are counterbalanced by attention to criticisms such as those described, it offers a rich resource for design of instruction to enhance moral thinking. Numerous educational applications have sprung from the model, ranging from democratic classrooms in racially mixed areas (Wasserman, 1976) to a district-level intervention in a group of public schools (Sullivan and Dockstader, 1978). Whitely (1978) reports on a program at the college level. A detailed analysis of theory and review of applications appears in Munsey (1980); included in that collection is a Kohlbergian analysis of the development of religious faith (Fowler, 1980).

The original instructional model used dilemmas as a starting point for classroom discussion. Dilemmas may be real (such as a classroom discipline problem) or imaginary (whether to identify a friend who was seen shoplifting). The discussion begins with a clarification of the students' thoughts in response to the situation; once this is accomplished, disequilibration is induced by raising questions about the adequacy of the students' logic. For instance, is the prescribed response one that could safely be generalized to all other people in a similar siutation? What would be the consequences? Students can be encouraged to view the situation from the point of view of each of the actors to determine whether their proposed resolution would be fair to all concerned. While these approaches are effective with young people, college students may benefit from use of dilemmas drawn from history, literature, drama, philosophy, sociology, or other fields. Chickering (1976, pp. 100-106) has provided numerous suggestions for doing just that.

Kohlberg has introduced the concept of the "justice structure" of an environment--its governing moral and ethical dynamics, which can be expressed in terms of the six moral stages. Faculty should be aware that many students are highly sensitive to morality and injustice, and highly responsive to the justice structure provided by the college environment. They frequently enter in a Stage 4 or possibly Stage 5 frame of mind. If the justice structure they encounter in college emphasizes maintenance of rules and regulations and following of established, unchallengeable procedures, they will find little to challenge their Stage 4 reasoning or consolidate State 5. In contrast, if the environment encourages open

discussion of ethical and moral questions, and if the system is responsive to claims of unfairness or injustice, they will come to understand the evolutionary process of law which is embodied in our Constitution. As always, clear rationales, tolerance of disagreement, and empathetic role models are positive conditions for growth and development.

Kohlberg's successful use of moral dilemmas, which are in effect simple case studies, reinforces the claims of other theorists and practitioners for the value of interactive methods of instruction in the college classroom. Case studies with a value orientation can be useful for encouraging moral reasoning in many courses, as noted above. Keeping in mind Gilligan's criticisms, case studies should be written, discussed, and evaluated within a specific context rather than as abstract, universal dilemmas. If one is concerned about the cognitive bias of the model, case studies could be drawn from real life or from field experiences designed to require courage as well as rationality. Of course, they may be difficult to set up, but whether by design or by coincidence, students who are put in a position to make difficult moral decisions should be given ample opportunity for debriefing (in class or in private, as appropriate) and for reflection on the process and its consequences. Journals, poetry, and other written materials can serve as an excellent medium for "working out" of conflicts which may be engendered by such experiences.

Kohlberg's work should encourage college educators to recognize the need for and appropriateness of moral deliberations in all areas of inquiry. Even in science courses, students should be confronted with moral and ethical decisions and implications of what they are learning. Perhaps in today's world we should say <u>especially</u> in science courses. The point is that no subject is value-free, no fact is context-free, and no observation is purely objective. Until students recognize this, they cannot be said to be fully and properly "educated." Whatever model of moral reasoning or development is used, the following guidelines suggest the kind of climate we must attempt to create if we are to achieve this goal. Students should:

Be active in developing and defending their own positions

Be challenged to probe deeply the justifications for human choices, especially their own

Confront standards and points of view that counter their personal perspectives

Be encouraged and enabled to assume the role of someone with a contrasting point of view

Wrestle with problems that have no simple solutions (Morrill, 1980, p. 101)

All of these guidelines suggest a far more interactive, discussion-centered, student-dominated classroom setting than most faculty are accustomed to using. Faculty whose natural style does not favor these approaches will need support from their colleagues if they are to succeed. The importance and central nature of the challenge are such that we must work to create these opportunities for our students, and grow to be comfortable with them ourselves. In the long run, the learning from such discussions well may be as great for the professor as for the students, and the process will be a stimulating one.

CONCLUSION

"The success of education," Carol Gilligan notes, "depends on its leading students to question that which formerly was taken for granted."

Chickering (1969) has pointed out that environments consistent in their outlook, theme, and tone are most influential in students' development. In a similar vein, programs such as DOORS and ADAPT have demonstrated the power of concerted faculty effort to assist students in acquiring skills needed for the new tasks they face in college and adult life. And Winter, et al. (1981) have confirmed that student outcomes do reflect goals emphasized in college catalogs. The theories presented enable us to be more intentional about achieving the goals we identify as desirable for our students. They provide a common language with which faculty can engage in campus-wide dialog about the purposes and methods of education. But most important of all, they remind us that if we want to be effective and if we hope to provide students with the makings of a "better world," we must first arouse their involvement in learning. And to do this we must do no less than what one historian and veteran teacher describes as "speaking to the deepest concerns of students" (Ward, 1981, p. 381). We must be convinced of the importance and central nature of the concerns to which we devote precious classroom time. And we must include in our concerns the courage to make thinking, feeling, and social responsiblity explicit aims of the educational venture.

> It was the absence of such questionning in the testimony of [Adolph] Eichmann [during his trial for exterminating millions of Jews] that has led [Hannah] Arendt [The Life of the Mind, 1978] to see, in his thoughtless obedience, the evil of our time and to wonder if the activity of thought might stand as an impediment to its recurrence. (Gilligan, 1981, p. 156)

For colleges willing to make the commitment, developmentally designed program planning and course design have the potential for greatly enhancing the learning and growth which takes place under their guidance and, as a consequence, vastly increasing the satisfaction and the contributions of faculty and students alike.

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